Haptic in Architectural Design Education

New Possibilities in the Information Age

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In this paper, I would like to dwell on the notion of haptic, comes from the Greek word (Haphe) and means *related to the sense of touch*, in the field of architectural education. Considering the tactile studies in the modern design field and critically reviewing them, I am aiming to focus on the transformation of architectural education by tracing the sense of touch. Scientification of design in terms of Design Methods will be identified through understanding of the contemporary developments in haptic technology. Moreover, I want ask and try to answer the following questions: "Where is our hand in the design activity? How can we touch and change the space that we aimed to design?"

Education of Touch in Modern Era

In *The Manifesto of Tactilism* published in 11 January of 1921, Filippo Tommano Marinetti as the pioneer of the Futurist movement heralded the new way of making art and classified the properties of touch.[1] While he was swimming in the sea coast, he encountered the idea of producing art with tactile qualities of different materials. Later, he produced tactile tables only for the sense of touch. Through the text, tactile properties of specific materials were identified with his own experiences for producing touchable art works He intentionally refused and eliminated the visual properties in these works. He differentiated these productions from the interactive works of art in painting and sculpture. In this impressive and exciting text, he mentioned the ways of exploring the new way of art. He underlined the notion of "hand-journeys" to create images by the tactile orders. He proposed to make tactile rooms focusing on the touch experience for the observers of different sexes. He defined the Tactile Rooms as follows: "In these tactile rooms, we will have floors and walls made of large tactile boards. Tactile values of mirrors, running water, rocks, metals, brushes, lightly electrified wires, marble, velvet, rugs that will give the bare feet of the male and female dancers varied pleasures."[2]

He identified the properties of tactile pillows, tactile sofas, tactile theatres, and tactile streets. Finally he clarified the methods of educating the sense of touch. Wearing gloves to keep the hands from touch to intensify the desire of brain for varied tactile sensations, swimming underwater, specifically in the ocean for distinguishing tactilely the plaited currents and different temperatures, and exercises in absolute darkness of evening for personal experiments were three of them.[3] He ended up his manifestation by declaring the negation of scientific methods for understanding the interactions between human and matter.

For me this particular text was fruitful not only to re-consider the transformation of modern architectural education, but also to differentiate the viewpoints to understand the notion of design and space. Concentrating on only this particular text and independent from its ideological connotations, Marinetti personally clarified his practice of touch, categorised his tactile experience and identified the ways of making his new art. Furthermore he defined the space for it. This total-work-of-art perspective of modern era was based on the perception and experience of the individual in the space.

In this holistic manner, there will be no tactile art and Tactilism without human being in the space. However, through his consideration, he refused the scientific methods that were limiting his own perceptions of matter. Based on a single sense of perception, he generated an individual journey for the observer. Although he determined the tactile parts of the space of his art, he did not aim to limit and control the individual experiences of the observers during his manifestation in the text.

This negation of scientific methods and focusing on the experience of space, for me, was a reaction to the positivist understanding of life in early years of twentieth century. However, the positivist engagement was the major tendency of modern conceptualisation of space in the general sense. Vienna Circle as the focal point of logical thinking and the conceptualisation of unified scientific world had its impacts in the education of architecture with its tendency of considering life in totality. Moreover, Bauhaus also affected by these positivist attitudes although it housed varying thoughts and tendencies for design.[4]

In one hand, masters and students were working in the modern ateliers with different materials like wood, paper, steel, fabric, etc. by their hands constructing different types of art works, designs and models. They created their own "hand- journeys" through materials by non-conventional experiments and experiences. In the practice of Vorkurs executed by Bauhaus, the concentration of tactile qualities of materials regarded besides their constructional limits for producing designs in varying disciplines. Hand-eye coordination was the central

activity of the architectural education in the workshops. To act and re-act according to the design issues by the help of the creativity of the students, the proposals of design were produced with the motto of "learning-by-doing". The limits of both visual and tactile qualities of design were handled by Vorkurs of Bauhaus in the workshops—not in the studios.[5] Moreover, by the help of the techniques of reproduction in design, each student was sharing and publicising their individual journeys in the exhibitions.

On the other hand, the standardisation in modern architecture was dominating the production of space in general sense. The transformation of mode of production also affected the production of architecture and its education accordingly. Specialisation and division of labour transformed the methods of producing architecture. Rational and logical architects as the chiefs of the modern orchestra were educated as the determining pioneers of the notion of space to control and manipulate the physical environments.

During those years of the modern movement, the critical thoughts of Walter Benjamin focused on the perception of art objects by the new construction methods in the age of mechanical reproduction.[6] His interpretation of reproduction concentrating on the "aura lost" in art objects by the invention of photography, for me, could be a starting point for relating the new processes in the production of architectural design in terms of losing the perception and quality of tactility in the notion of space. By the reproduction techniques of architectural design with the dominant perspective of standardisation and rationalisation, in some degree, we traced a negation of the experiences of hand in architecture.

It was like the situation in the early period of cinema. In the film of Dziga Vertov, *The Man with the Moving Camera*, we saw the working hands of the editor during the production process of the film. However, during the late years of the modern movement, in some degree we lost this feeling of touch. Studies on documenting the experiences of life could not balance the overwhelming change in the favour of dramatic fictions of narratives. Although there were tendencies that concentrated on the transparency in the production processes, the hand as the generating figure of labour was losing its importance and existence in the favour of commercialisation.[7]

Transformation of Design Methods

Considering the relations between scientific thought and architectural design, I would like to dwell on the transformation of the major tendency in design education called Design Methods.
I chose to refer to the historical categorisation of Geoffrey Broadbent who was one of the pioneers of this particular movement.[8]

The consideration of lived-space[9] was regarded by the researches that were focused on the mind of designer as the scientification of design process in the first generation of Design Methods. Focusing on the design activities, the mind of designer called as "Black-box" including the tendency of undefined and unknown field of study. This approach in design was the opposite of "Glass Box" understanding which was concentrating to uncovering all the hidden dimensions and levels of design process. Design was considered as a problem solving activity and it was handled to understand the relations of design process both in practical and theoretical level. The empirical approaches of "Black Box" and "Glass Box" understanding in the design education operated the domination of science for architecture and space in this period of Design Methods.[10]

Following this path of historical perspective, the second generation can be summarised as the death of designer through the participatory actions. Active participation of designer in the production and the consideration of architecture without designers triggered the destruction of the hierarchical level difference between designer and user with a different mode of social responsibility. Direct connection to the process of design was executed. Social sciences like psychology, sociology were underlined and utilised to understand the notion of space in architecture. Economical, social and cultural dimensions of design were taken into agenda of Design Methods in the favour of eliminating alienation in design process. Articulation of the existential thoughts and the structural analysis of Marxism, the second generation situated the paradigm shift in Design Methods for identifying the production of architecture with its social dimension.[11]

The scientific perspectives such as Synectics as the method for understanding the creativity in design, and Ekistiks as the method for examining the human settlements were considering the man and environment interactions starting from the early years 1960s. Trial and error method was initiated in the design field for the "successful" physical environments.[12]

If we want to categorise the studies of Design Methods now, one can only talk about the multiplicity in Design Methods. As the third generation in the information age leaning on the computation is examining the quality of space. The attempt to identify the process of design activity, visualisation is the dominating issue in the field of architecture. Visuality in architectural design has reached to its peak point in the information age.

Computation as mode of production in design referring to the digital innovations has turned into a new apparatus and has searched a new place in the production of architectural environment. Image-

based representations, diagrammatic approaches of design processes, non-contextual terminologies and paperless productions are calling for a new paradigm shift for architectural design in the new global world. Apparatus of the architecture performance is merging with the software developments and technological innovations to produce architectural projects. Moreover, this situation also requires a paradigm shift in the architectural education.

New Possibilities of Haptic Technologies and Architectural Education

"The Medium is the Ma(e)ss.age" slogan for the philosophy of media heralds a global village in the information age.[13] Flexible production in the neoliberal world also transformed the mode of production of material space. The corporate formations of Trans-National-Organisations (TNO) in architectural field, the flexible production of architectural projects, and establishment of urban design projects in the global real-world with white-collar workers in architecture offices introduce this new transformation. That is the invisibility of the hand in architectural education.

In these offices, architects as the producer of projects creates animations, 3D presentations, 3D models in virtual reality for satisfying and persuading the clients and they facilitate the mediation between the virtual and the real world. Global clients as the generator of the architecture productions decide and execute the architectural projects of the star architects. The white-collar architects as the technical labour in the construction sector generate the architectural designs and the performance of creativity in the favour of the demands of corporate formations.

This general tendency also generates the academical studies of the architectural education. By the new conceptualisation of universities, the architectural education is changing in the new "multiversities" by the integration with the industry. Sponsors of laboratories for developing selected departments of academy extend the limits of technological transformation. In some cases, the notion of science in modern era is transformed into the commercialisation of science with its trans-national partners and sponsors.

Haptic technologies are dominating cultural, social and spatial dimension of everyday life by new innovations.[14] Vibrating cell phones is facilitating our communication. Computer games cannot be thought without joysticks and game consoles. Moreover, the haptics devices as the control mechanisms for the technicians in surgical field of medicine are designing for the vital organs of the body to transmit the senses of touch. Wired glove as the input device for virtual reality environments created touch and movement based control of data. Cybersex with its own commercial instruments heralded a new form of sexual tactility for the everyday life of contemporary world. They are also shaping the production of architectural projects by their innovations. Mouse and keyboards of computer as the primary mediators of the commands of designer is now in every hand.

With these technologies, the information of perception is transmitted through media. The elimination and control of perception in the sense of touch is establishing through the technological control devices and these particular devices are no longer neutral but in the service of commercial structures that have to survive in the late capitalism. They function as the transmitter of data from inside to outside of Virtual World and vice versa.

This transformation of technology dominates the architectural education in terms of using an apparatus for transmitting the knowledge, the culture and skills of architecture. Digitalisation and visualisation of data undergoes an abstraction of the knowledge of real-world-experiences in computing. Student-based education is formulated in the design studios and social gathering of students for the architectural studies are shifted to the limits of computer-based apparatus. Virtual studios are linking the outside architectural world into the physical classrooms. By a single touch of hand, the students can reach to the accumulation of knowledge about architecture by the possibilities of World Wide Web. Limits of the studios are increased by the broadband widths of the computer, but they are bounded by the perimeter of its screen field and its capacity.

In the architectural education of recent years, the "hand-journeys" of students and designers are transmitted by the haptic devices and these journeys are mostly determined by the limits of the device that they want to operate. Scientification of design activities with the dominance of technological innovations limited the human perception and conception of experiences in the real world.

It is hard to talk about the sense of touch depending on the experience in the design activities and trace the role of hand in design education. Furthermore, it is getting difficult to touch and change the architectural space in the favour of the individual sensations in the global world during its production process. New possibilities of information age are hiding the properties of them. However, our own haptic sensation in the physical environment have still been affected by the exterior world and it need to be concerned.

Notes:

1 Marinetti, F. T., *The Manifesto of Tactilism*, Written in Milan 11 January 1921, Read at the Theatre de l'Œuvre (Paris), the World Exposition of Modern Art (Geneva), and published in Comoedia in January 1921. For his another manifestation of the sense of touch, see Marinetti, F. T., *Tactilism*, *The Book of Touch*, ed. Classen, C., Berg Publications, UK, 2005.

2 Ibid.

3 Ibid.

4 Galison, P., Aufbau/Bauhaus, *Logical Positivism and Architectural Modernism, Critical Inquiry*, Summer 1990, Chicago, p. 709.

5 See Hays, K. M., *Diagramming the New World, or Hannes Meyer's "Scientization" of Architecture, The Architecture of Science*, Galison, P. and Thomson, E., (eds.), The MIT Press, 1999, p. 233–252.

6 Benjamin, W., *The Work of Art in the Age of Mechanical Reproduction*, Illuminations, (1936) 1970.

7 In his article Mark Patterson traces the changing experience of measuring space from by using hands and feet to geometric methods. Measuring as a method for geometry is examined in the field of cultural history and the dominance of visuality over tactility is examined. "To forget touch is to disregard the bodily senses, to emphasize the eye (abstracted visualism) rather than the hands and feet (haptic experience). Gillian Rose suggests that geography has historically shared this visual enterprise, although this separation of the senses is simplistic. It is my purpose in this paper partly to continue the deconstruction of the discourse of visualism, and partly to reveal the underlying haptic (tactile, kinaesthetic) aspects of spatial experience and to reinscribe them into cultural history." See Paterson, M., *The Forgetting of Touch: Re-membering Geometry with Eyes and Hands*, in: *Angelaki*: *Journal of the Theoretical Humanities*, Volume 10, Number 3, December 2005.

8 Broadbent, G., *The Development of Design Methods—A Review, Design Methods and Theories*, Volume 13 No: 1, p. 41, 1979.

9 Perceived, conceived and lived spaces are the categorisation of Lefebvre for the notion of space. The first notion takes space as physical form, real space, space that is generated and used. The second one is the space of savoir (knowledge) and logic, of maps, mathematics, of space as the instrumental space of social engineers and urban planners. Space is sometimes a mental construct, *imagined* space. Third formulation sees space as produced and modified over time and through its use, spaces invested with symbolism and meaning, the space of *connaissance* (less formal or more local forms of knowledge), space as *real-and-imagined*. Lived-space is the unification of conceived-space and perceived-space. Namely, it is the space including all sensible experience of perception (senses) and conception (mental). Lefebvre, H., *The Production of Space*, trans. D. Nicholson-Smith, Oxford and Cambridge, Blackwell, 1993.

10 Bayazıt, N., *Investigating Design: A Review of Forty Years of Design Research, Design Issues*, Vol. 20, no: 1, p. 16–29, Winter 2004, MIT Press. This article is also published in ITU Journal in Turkish, see Bayazıt, N., Tasarımı Keşfetme: Tasarım Araştırmalarının Kırk Yılı, *ITÜ Dergisi*la, March 2004.

11 Broadbent, G., *The Development of Design Methods—A Review, Design Methods and Theories*, Volume 13 No: 1, p. 41, 1979.

12 Here, we are referring to the article of Ilhan Tekeli. The Turkish name of the article "Tasarım Sürecini Bilimselleştirme Çabaları" is translated as *On Scientific Approaches to Design Process* by Tekeli. In this text, Tekeli considers the similarities of design and science emphasizing the notion of intuition. Concluding remarks of his were considering the multi-dimensional character of architectural design and the unification of functional, scientific and aesthetic dimension of architecture. Tekeli, I., Tasarım Sürecini Bilimselleştirme Çabaları, Mimarlık, 148, 1976/3, p. 59–62.

13 Mcluhan, M., Fiore, Q, *The medium is the Massage: An Inventory of Effects*, with Agel, J., Gingko Press, (first published in 1967) Oct 2005.

14 In the unpublished thesis, Angela Chang has differentiated the sense of touch as active and passive. Former covers cutaneous sensations based on the stimulation of receptors in the skin like: tactile, temperature and pain sensations. Latter are proprioceptive and kinesthetic sensations. "Proprioceptive sensation refers to the awareness of position of your limbs. Kinesthetic sensation refers to the sense of movement of the limbs." By two major disciplines; psychology and cognitive science, Chang refers to the scientific aspects of touch. See Chang, A, *ComTouch: A Vibrotactile Mobile Communication Device*, Unpublished Thesis, Media Arts and Sciences, Massachusetts Institute of Technology.